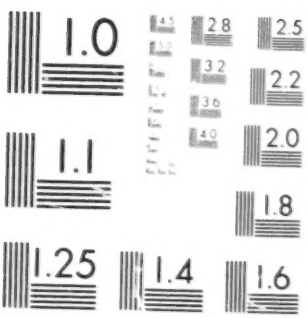

MICROCOPY RESOLUTION TEST CHART
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DOCUMENT RESUME

ED 139 963 CE 010 984

AUTHOR Taylor, Ernest
TITLE Building Maintenance. Performance Objectives. Basic Course.
INSTITUTION Duval County School Board, Jacksonville, Fla.
PUB DATE May 76
NOTE 47p.; For a related document see CE 010 951

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Behavioral Objectives; Building Operation; *Buildings; Cleaning; Construction (Process); *Criterion Referenced Tests; Curriculum Guides; Grade 10; *Maintenance; Painting; Senior High Schools; Trade and Industrial Education

ABSTRACT

Several intermediate performance objectives and corresponding criterion measures are listed for each of the 13 terminal objectives for a basic high school building maintenance course (the first year of a 3-year program). The materials were developed for a 36-week course (2 hours daily) designed to enable 10th grade students to develop competencies in the skills required of a building maintenance mechanic. Instruction includes carpentry, painting, electrical maintenance, plumbing and pipefitting, concrete work and repairs, glazing and caulking, floor care, custodial practices, lawn and shrub care, blueprint reading and sketching, and occupational safety. Students are given the opportunity to develop their skills by practical application. Titles of the terminal objectives are Orientation, Vocational-Industrial Student Organization, Occupational Information, Blueprint Reading, Occupational Safety, Carpentry, Painting, Electrical Maintenance, Plumbing and Pipefitting, Concrete Work and Repairs, Glazing and Caulking, Custodial Practice, and Landscaping. (This manual and 54 others were developed for various secondary level vocational courses using the System Approach for Education (SAFE) guidelines.) (HD)

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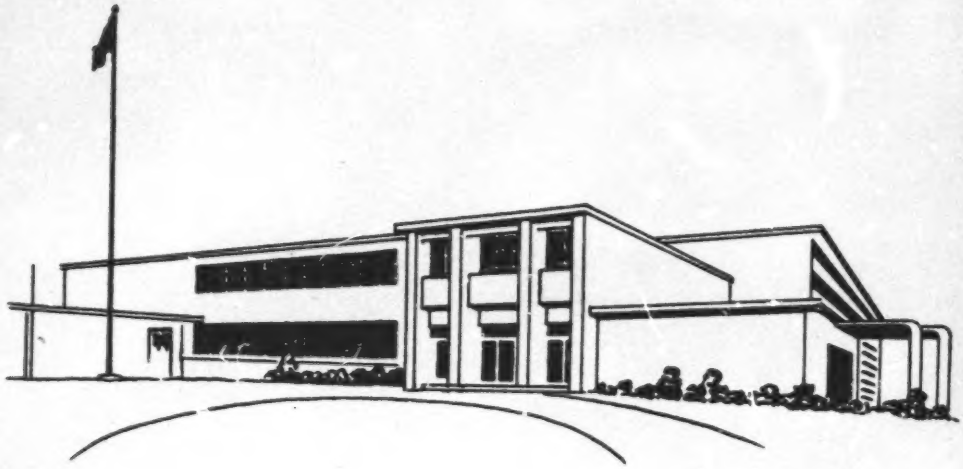

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Building Maintenance

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OE 010 984

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Duval County Public Schools

May, 1976

ACKNOWLEDGEMENTS

This manual was developed using System Approach For Education (SAFE) guidelines.

Appreciation and recognition are extended to the following educators who have assisted in the preparation of this manual:

Mr. Charles Downing, Supervisor
Vocational-Technical Education

The following educator participated as the writer of this manual:

Mr. Ernest Taylor, S.I.E. Coordinator

Cover design and printing by Mr. Chester Seivert

Typist: Esther Zucker

BUILDING MAINTENANCE - BASIC

Accreditation No.: 9313

Length of Course: 36 weeks

Time Block: 2 hours daily

COURSE DESCRIPTION

Basic (Grades 10, 11, 12)

Organized special classroom and practical experiences designed to enable the student to develop competencies in the skills required of a building maintenance mechanic. Instruction includes carpentry, painting, electrical maintenance, plumbing and pipefitting, concrete work and repairs, glazing and caulking, floor care, custodial practices, lawn and shrub care, blueprint reading and sketching, and occupational safety. Students are given the opportunity to develop their skills by practical application. Students are also encouraged to participate in the activities of the Vocational Industrial Clubs of America.

BUILDING MAINTENANCE - BASIC - 9313

0.0 Program Objective

1.0 Orientation

2.0 Vocational-Industrial Student Organization

3.0 Occupational Information

4.0 Blueprint Reading

5.0 Occupational Safety

6.0 Carpentry

7.0 Painting

8.0 Electrical Maintenance

9.0 Plumbing and Pipefitting

10.0 Concrete Work and Repairs

11.0 Glazing and Caulking

12.0 Custodial Practices

13.0 Landscaping

BUILDING MAINTENANCE - BASIC

1 Year - 10th grade - 2 hour block - 360 hours

Approximate Time Allotments

Unit	Classroom	Lab Work	Total Hours
Orientation	3 hours	-	3 hours
Student Organizations	3	-	3
Occupational Information	4	-	4
Blueprint Reading and Drawing	6	6	12
Occupational Safety	5	4	9
Carpentry	15	45	60
Painting	6	12	18
Electrical Maintenance	30	35	65
Plumbing and Pipefitting	16	34	50
Concrete and Masonry Repair	9	12	21
Glazing and Caulking	3	9	12
Custodial Practices	15	43	58
Landscaping	15	30	45
TOTAL HOURS			360

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 1.0 — Orientation

The learner will state in writing the purpose of pre-stated performance objectives, he will further state the conduct expected, the clean-up regulations, the grading procedure, and the items required in class each day.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		1.0	See attached test.
1.1	The learner will state, orally or in writing, the purpose of using pre-stated, performance based objectives in this course.	1.1	Write the reason for the use of pre-stated performance based objective in the course.
1.2	The learner will state in writing the conduct expected of him in this course.		State in writing the following:
		1.2	a. The conduct expected of you in this course.
1.3	The learner will state in writing the clean-up regulations used in this shop.	1.3	b. The clean-up regulations used in this course.
1.4	The learner will state in writing the grading procedure used in this course.	1.4	c. The grading procedure used in this course.
1.5	The learner will state in writing the required items he must have in this class each day to succeed in this program.	1.5	d. The required items you need to bring to class each day.

Criterion Measures - T.P.O. 1.0

Students Name_____

Complete the following statements:

1. To be successfull in this program I need to bring the following items to class each day: _____, _____, _____.

2. Clean up regulations in this class help to promote good working habits that will carry over to my job after graduation. Following are three clean-up regulations:

   a. _____

   b. _____

   c. _____

3. I am expected to conduct myself as follows in this program:

   _____

   _____

   _____

   _____

4. I understand how I will be graded in this class, the following statements denote the grading system in effect:

   _____

   _____

   _____

5. Pre stated performance based objectives will help me in this course because:

   _____

   _____

   _____

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 2.0

Vocational-Industrial Student Organization

The learner will demonstrate his knowledge of VICA by the Completion of each I.P.O. and scoring a minimum of 70 points on the attached 100 point rating scale.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		2.0	Student Rating Scale Voluntarily joined VICA ____ 20 Recruited others to join ____ 20 Cooperative attitude ____ 20 Favorable interaction with others ____ 20 Worked on committees ____ 10 Held Office ____ 10
2.1	The learner will answer 4 of 5 questions pertaining to student organizations available to Industrial Education Students.	2.1	Write answers to the following questions: a. Name one club designed especially for Industrial Education Students. b. What does the acronym, VICA, mean? c. Who belongs to VICA? d. What benefits are derived from belonging to VICA? e. What uniform type clothing symbolizes membership in VICA?
2.2	The student will state orally or in writing the phases of completion in the industrial trade sponsored by VICA.	2.2	Competion in the various Vocational-Industrial trades sponsored by VICA, is on which one of the following levels: 1. Local district only 2. Statewide 3. Nationwide 4. All of the above

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 2.0 (cont'd)

Vocational-Industrial Student Organization

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
2.3	The learner will state orally or in writing the criterion for entering each phase of VICA competion.	2.3	List the criterion for entering each phase of VICA competion: 1. _____ 2. _____ 3. _____ 4. _____

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 3.0

Occupational Information

The learner will, with 90% accuracy, identify tasks common to this trade, fill out a job application, identify sources of job openings, state the procedure for applying for a job, define productivity, and state the wage and "fringe" benefits expected in this trade.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		3.0	See attached test.
3.1	Given a list of tasks the learner will correctly identify with 90% accuracy, the ones commonly performed by the Building Maintenance Man.	3.1	Underline the tasks that normally are performed by the Building Maintenance Man: a. construct new buildings b. repair broken windows c. examine equipment and fixtures to make sure they work properly. d. wire new circuits e. lawn care f. plumbing maintenance g. overhaul machinery h. shrubbery care i. automobile maintenance j. repair broken masonry
3.2	Given a typical job application blank, the learner will with 90% accuracy, fill in all blanks.	3.2	Fill out the sample job application blank without additional help.
3.3	The learner will, orally, identify 3 sources of information about job opportunities in this field.	3.3	Name 3 sources of information concerning job opportunities in the building maintenance field.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 3.0 (cont'd) Occupational Information

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
3.4	The learner will state orally the proper procedure to follow in applying for a job including each of the following points: a. dress b. manner c. speech d. attitude	3.4	Orally state the proper procedure to use in applying for a job, include each of the following points: a. dress b. manner c. speech d. attitude
3.5	The learner will define the term "productivity".	3.5	Orally define the term "productivity".
3.6	The learner will state in writing the hourly wage to be expected as a Building Maintenance Man in each of the following categories: a. helper b. new man c. experienced man	3.6	List the hourly wage you can expect as a Building Maintenance Man in each of the following categories: a. helper b. new man c. experienced man
3.7	The learner will state orally 5 "fringe" benefits available to Building Maintenance Workers a. insurance b. hospitalization c. retirement d. sick leave e. paid vacation f. paid holidays g. free laundry service	3.7	Name 5 "fringe" benefits available to the Building Maintenance Man.

Criterion Measures T.P.O. 3.0

1. The term productivity means:

_____

_____

_____

2. List 3 sourses of job information for building maintenance opportunities.

_____

_____

_____

3. State 10 tasks performed by a building maintenance worker.

4. Write a short paragraph illustrating the proper procedure to follow when applying for a job.

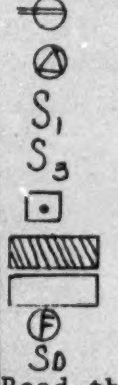
5. List 5 fringe benifits for the building maintenance trade.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 4.0

Blueprint Reading

The learner will demonstrate his knowledge of blueprint reading by the successful completion of a written test with 70% or better proficiency.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		4.0	Test attached
4.1	Given two lists, one of electrical drafting symbols and one of definitions, the learner will with 80% accuracy match the two lists.	4.1	Match the two lists:  a. single pole switch b. service panel c. fan outlet d. three-way switch e. ball transformer f. automatic door switch g. duplex convenience outlet h. radio outlet i. special purpose outlet j. push button k. distribution panel
4.2	Given a typical commercial building blueprint, the learner will read it and identify items listed on a check list concerning this blueprint with an accuracy of 80% or better	4.2	Read the blueprint given you and record the following: a. scale used _____ b. outside dimensions _____ c. type of wall construction _____ d. type of heating _____ e. Type of roof _____ f. type of windows _____ g. locate power cable entrance _____ h. locate water supply valve _____

Criterion Measure - T.P.O. #4.0

COMPLETION TEST: Identify the following symbols and abbreviations in the answer column at the right.

EXAMPLE:

Thermostat

1. S_3
2. (M)
3.
4. ps
5. ○
6.
7. I
8. OC
9. WF
10.
11. DS
12.
13. AL
14. Φ
15. E

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

SCORE _____

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 5.0

Occupational Safety

The student will demonstrate his knowledge of the occupational and personal hazards in the Building Maintenance Occupation by citing safety procedures, and operating (4) four power tools of the trade utilizing proper safety precautions. Successful achievement of this Terminal Performance Objective will be evidenced by a score of 75% or better.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		5.0	Written Test 1. When lifting, be sure you have a good sure footing and a good hand hold. 2. Exits and fire doors should be blocked with materials, only when there is no other space available. 3. Store oily rags and other combustible materials in an air tight container. 4. In case of an electrical fire, the first step taken is to de-energize the circuit. 5. People should be allowed to walk over freshly waxed floors that are still wet, if rubber shoes are worn. 6. Safety devices and guards may be removed from equipment when it is necessary to complete the job. 7. Defective electrical material should be repaired or removed from service immediately. 8. Aisles, walkways and danger areas, should be clearly marked and free from debris. Performance Test Demonstrate the proper, safe operation of the four power tools assigned you by the instructor.
5.1	The student will list (5) five safety rules pertaining to the Building Maintenance Occupation.	5.1	Write five (5) rules pertaining to the Building Maintenance Occupation.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 5.0 (cont'd) Occupational Safety

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
5.2	Given four (4) power tools common to the Building Maintenance Occupation, the student will demonstrate his knowledge of power tool safety by listing five (5) operational safety precautions for each.	5.2	List the operational safety precautions of the assigned power tools.
5.3	The learner will with 80% proficiency state orally or in writing the four classes of fire and their basis extinguishing agent.	5.3	List the four classes of fire and the basic extinguishing agent for each.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 6.0

Carpentry

The learner will identify lumber dimensions, hand tools and hardware, commonly used in carpentry. He will demonstrate his ability to cut paneling, use the skill-saw, use the stud-gun, hinge a door, make a cope joint, proper nailing and install a lockset. Successful completion of each I.P.O. criterion measure will denote completion of Terminal Performance Objective.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
6.1	The learner will state the actual size of given stock lumber designations: a. 2 x 4 b. 1 x 6 c. 2 x 8 d. 1 x 10	6.1	Write after each given stock lumber size the actual dimension: a. 2 x 4 b. 1 x 6 c. 2 x 8 d. 1 x 10
6.2	The learner will identify the size and type of 4 given nails: a. 4 d finish b. 6 d casing c. 8 d common d. 7 d galvanized box	6.2	Take the four nails given you and place each one over its proper size and type name. a. 4 d finish b. 6 d finish c. 8 d common d. 8 d box e. 6 d casing f. 7 d box g. 7 d galzanized box
6.3	Given samples of 4 common wood screws, the learner will identify each: a. round head b. oval head c. flat head d. pan head	6.3	Take the 4 screws given you and place each over its correct name: a. round head b. phillips head c. oval head d. flat head e. pan head

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 6.0 (cont'd) Carpentry

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
6.4	Given ten common hand carpenters tools, the learner will correctly identify 80% of them. a. framing square b. claw hammer c. nail set d. cross-cut saw e. coping saw f. 6 ft. folding rule g. wood chisel h. anger bit i. combination square j. level	6.4	Take the ten tools given you and write the proper name of each opposite its letter that appears on the tool.
6.5	Given samples of 5 common pieces of building hardware pertinent to carpentry, the learner will correctly identify each with an accuracy of 80%. a. butt hinge b. surface hinge c. lock hasp d. cabinet lock e. door stop	6.5	Take the 5 pieces of hardware given you and write the proper name of each opposite the letter that appears on the piece. a. b. c. d. e.
6.6	The learner will state common dimensions used in the carpentry trade: a. center to center of studs. b. butt hinge measurements from top and bottom of door c. interior door height d. exterior door height	6.6	Write the common measurements used for each of the following: a. center to center of studs b. butt hinge measurements from top and from bottom of door c. interior door height d. exterior door height

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 6.0 (cont'd) Carpentry

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
6.7	The learner will demonstrate his ability to correctly cut pre-finished paneling with a portable electric hand saw (skill-saw), without splintering the paneling; the learner will further demonstrate how to use the skill-saw to cut off 2" stock. He will observe all safety precautions pertaining to this power tool.	6.7	Demonstrate to your instructor the safe use of the skill-saw to do the following: a. cut off 2" stock b. cut pre-finished paneling without splintering
6.8	The learner will demonstrate the safe and proper use of a cartridge power stud gun by nailing a 2" piece of wood stock to concrete.	6.8	Demonstrate to your instructor the safe loading positioning and use of the cartridge powered stud gun to fasten 2" wood stock to concrete.
6.9	Given two pieces of base shoe moulding and two pieces of crown moulding and the necessary tools, the learner will correctly make a cope joint for each piece of moulding as evidenced by a score of 70 on a 100 point rating scale.	6.9	Make a copy joint with each of the following: a. base shoe b. crown moulding

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 6.0 (cont'd) Carpentry

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
6.10	The learner will demonstrate the correct nailing practices for each of the following: a. base shoe moulding b. paneling c. toe nailing studs d. plywood Included in the above is the choice of the correct nails and tools with no hammer marks.	6.10	Demonstrate the correct choise of nails, tools, and procedure for each of the following nailing jobs: a. base shoe moulding b. paneling c. toe nailing studs d. plywood
6.11	The learner will demonstrate the correct choise of tools and procedure to install a pair of butt hinges on a door and casing as evidenced by a score of 70 on a 100 point rating scale.	6.11	Choose the correct tools and use the correct measurements while demonstrating your ability to hinge a door to a door casing using butt hinges.
6.12	The learner will demonstrate his ability to install a given lock set on a door and casing as evidenced by a score of 70 on a 100 point rating scale.	6.12	Install a lock set on the door and casing assigned you. INSTRUCTOR RATING SCALE: 1. Tool selection..... 15 2. Knowledge of job..... 10 3. Speed..... 10 4. Attitude..... 15 5. Tool care..... 10 6. Safety..... 15 7. Accuracy..... 15 8. Cleanliness..... 10

COURSE BUILDING MAINTENACE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 7.0

Painting

The learner will demonstrate his ability to prepare job estimates, to select paint, prepare surfaces for application, apply paint and perform job clean-up with 80% proficiency as judged by attached rating scale.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		7.0	See attached test.
7.1	Given the names of types of paint the learner will state the base of each type, name its most common useage and its thinner. a. oil paint b. latex paint c. enamel, oil d. semi-gloss, oil e. alkyde enamel f. poly-urethane g. acrylic latex	7.1	
7.2	The learner will demonstrate the proper clean up and storeage procedures for paint brushes.	7.2	Clean and prepare for storage the paint brushes given you.

TYPE	BASE	USE	THINNER
oil paint			
latex			
oil enamel			
oil semi-gloss			
alkyde enamel			
poly-urethan			
acrylic latex			

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 7.0 (cont'd) Painting

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
7.3	Given a trim painting job (woodwork, door, sash, cabinet work) and the necessary materials the learner will paint the assigned work with no runs and with no smears on floors and will properly clean and store all equipment after use.	7.3	Paint the trim job assigned you, no runs or smears. Clean and store the equipment after use.
7.4	Given a specified problem area, the learner will list the proper type of paint to use according to the use of the room to be painted and will estimate with 90% accuracy the amount of paint needed for a 1 coat job.	7.4	For the room assigned you figure the following: type of paint needed _____ and amount of paint needed for 1 coat _____
7.5	The learner will state in writing the proper primer to use for 4 of 5 given materials: a. galvanized steel b. new concrete c. iron d. new wood	7.5	Name the proper primer for each of the following: a. galvanized steel _____ b. new concrete _____ c. iron _____ d. new wood _____

Criterion Measure - T.P.O.#7.0

For the live paint job assignment given you by the instructor, do the following:

a. materials selection
b. job estimate
c. surface preparation
d. complete paint job
e. clean up
f. inspection and evaluation by instructor upon notice of completion by student

You will be evaluated by the following rating scale:

accuracy - 25%
proper materials selection - 25%
proper tool selection - 15%
estimate - 10%
clean up - 15%
surface preparation - 10%

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 8.0

Electrical Maintenance

Given a mock up of a building electrical system, the learner will identify and repair three (3) malfunctions installed into the system with 100% accuracy.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
8.1	Given 5 basic electrical unit measurements in one list and definitions in another, the student will correctly match the two lists to 80% accuracy	8.1	Match the following columns: a. volts b. amps c. watts d. ohms e. watt-hours _____The unit of measurement of electrical current flow. _____The unit of measurement of electrical resistance. _____The unit of measurement of electrical consumption. _____The unit of measurement of electrical pressure. _____The unit of measurement of electrical power.
8.2	The learner will inspect and test the following electrical equipment at 75% accuracy: a. outlets b. fixture c. fuse boxes d. wiring	8.2	Inspect and test each of the following pieces of electrical equipment: a. outlets b. fixtures c. fuse boxes d. wiring
8.3	Given the proper materials, the learner will construct an extension cord utilizing the underwriters knot.	8.3	Construct an extension cord utilizing the underwriters knot.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 8.0 (cont'd) Electrical Maintenance

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
8.4	Given a list of three color coded wires, the learner will identify the proper connections with 100% accuracy	8.4	Identify the proper connections for the listed color coded wire: color — connection a. green _____ b. black _____ c. white _____
8.5	Given 5 samples of electrical copper conductors (wire) and a wire gauge, the learner will correctly gauge each conductor with 100% accuracy.	8.5	Take the 5 labeled wire samples and using the wire gauge, determine the wire size of each: a. _____ ga. b. _____ ga. c. _____ ga. d. _____ ga.
8.6	Given an entrance switch box with circuit breakers, the learner will demonstrate the correct procedure for wiring a circuit out of the box, observing the correct safety procedures as evidenced by a score of 70 on a 100 point rating scale	8.6	Wire 20 amp receptacle circuit out of an entrance switch. Choose the correct wire size and the correct circuit breaker. Observe all safety rules.
8.7	Given an existing duplex receptacle circuit, the learner will choose the correct tools, the correct materials and will extend this circuit to include 1 more duplex receptacle outlet as evidenced by a score of 70 on a 100 point rating scale.	8.7	Wire another duplex receptacle 3 ft. from the one existing. Use the same wire size. Observe all safety rules. Take feed off of existing receptacle.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 8.0 (cont'd) Electrical Maintenance

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
8.8	Given a defective florescent fixture, the learner will correctly troubleshoot the defect and given the necessary repair parts, he will put it in operating condition as evidenced by a score of 70% on a 100 point rating scale.	8.8	Troubleshoot and put into operating condition the florescent fixture assigned you. Observe all safety rules.

Criterion Measure - T.P.O. #8.0

In the electrical system mock up of a commercial building there are three (3) malfunctions and/or defects. Trouble shoot the system, identify the three (3) trouble areas and following all safety precautions, repair the defects to proper operating condition.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 9.0

Plumbing and Pipefitting

The learner will demonstrate his knowledge of Plumbing and Pipefitting nomenclature and his ability to effect repairs on plumbing and pipefitting fixtures, completing all the I.P.O.'s at the criterion level noted.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
9.1	The learner will define 5 given plumbing terms in writing at 80% accuracy: a. trap b. vent c. fixture d. waste pipe e. soil pipe	9.1	Define, in writing, the following terms: a. trap b. vent c. fixture d. waste pipe e. soil pipe
9.2	The learner will identify 8 of 10 given pipe fittings: a. street elbow b. tee c. union d. wye e. coupling f. reducer g. cap h. plug i. bushing j. elbow	9.2	On the work bench are 10 numbered pipe fittings. Write the correct name of the fitting by number: 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____
9.3	Given samples of 4 types of pipe, the learner will correctly identify them: a. cast iron b. copper c. steel d. plastic	9.3	On the work bench are 4 types of pipes, each with a letter, identify each by the corresponding letter below: a. _____ b. _____ c. _____ d. _____

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 9.0 (cont'd) Plumbing and Pipefitting

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
9.4	Given 6 common plumbing hand tools, the learner will correctly identify 5 of them: a. pipe wrench b. crescent wrench c. water pump plier d. valve seat wrench e. pipe die f. pipe stock	9.4	Identify the plumbing hand tools shown you by the instructor.
9.5	Given a compression water faucet, the learner will correctly replace the valve seat and the faucet washer, and test. There are to be no leaks or drips.	9.5	Replace the valve set and faucet washer in faucet assigned you. Then test. If leaks or drips appear, correct them.
9.6	The learner will correctly install an S trap on a sink fixture waste line so that there are no leaks, as evidenced by a score of 70% on a 100 point rating scale.	9.6	Install the S trap on the sink assigned you and test for leaks. Adjust to proper operation if leaks appear.
9.7	Given a length of 3/4" galvanized steel pipe and a 3/4" coupling, the learner will cut the pipe in half, thread each half and couple as per problem specification as evidenced by a score of 70% on a 100 point rating scale.	9.7	Cut, thread and couple a length of 3/4" galvanized steel pipe as assigned.

COURSE BUILDLING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 9.0 (cont'd) Plumbing and Pipefitting

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
9.8	Given a 1 foot length of 1/2" copper tubing, the learner will demonstrate his proficiency in tubing work by flaring each end and making two opposite 90° bends as per problem specification as evidence by a score of 70% on a 100 point rating scale.	9.8	Flare and bend a piece of 1/2" copper tubing as assigned.

INSTRUCTOR RATING SCALE

1. Tool Selection..... 15
2. Knowledge of job 10
3. Accuracy 25
4. Attitude 15
5. Tool Care 10
6. Safety 15
7. Cleanliness 10

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 10.0

Concrete Work and Repair

The learner will demonstrate his knowledge of concrete work and repair by successfully completing all of the Interim Performance Objectives and by planning, forming and completing a simulated side walk exercise with 80% accuracy as judged by attached rating scale.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		10.0	See attached performance test
10.1	Shown 5 basic concrete hand tools, the learner will correctly identify 4 of them: a. wood float b. edger c. finish trowel d. groover e. magnesium float	10.1	Identify the 5 concrete hand tools shown you.
10.2	The learner will state in writing the ingredients used and their proper proportion to mix concrete for a sidewalk.	10.2	List the ingredients used and the proper proportion of each to mix concrete for a sidewalk.
10.3	Shown 5 basic masonry hand tools the learner will correctly identify 4 of them: a. brick trowel b. striker c. tuck pointing trowel d. plaster trowel e. brick chisel	10.3	Identify the 5 masonry hand tools shown you.

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 10.0 (cont'd) Concrete Work and Repair

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
10.4	The learner will state in writing the ingredients used and their proper proportion to mix mortar for laying concrete block.	10.4	List the ingredients used and the proper proportion of each to mix a batch of mortar for laying concrete block.
10.5	The learner will describe in writing the steps, in their proper order, involved in laying out, forming and finishing a concrete slab to within 90% accuracy.	10.5	List the steps in their proper order involved in laying out, forming and finishing a concrete slab.
10.6	Given a list of 4 mortar joints, the learner will list which types are used on interior work which are used with exterior work with an accuracy of 75%.	10.6	List which types of the following mortar joints are used in interior work and which in exterior work. a. Struck joint _____ b. Weathered joint _____ c. Concave joint _____ d. "V" joint _____

Criterion Measure - T.P.O. - #10.0

A. Build a form for a concrete patio block (simulated sidewalk) that is 3 1/2" thick x 12" wide x 18" long.

B. Figure the amount of ingredients necessary to mix the concrete for this patio block.

c. Mix the concrete, pour in the form, and give the block a steel trowel finish and a rounded edge on all four edges.

RATING SCALE

Form -25%

Planning -25%

Steel Trowel Finish - - - - - - - - - - - - - - - - 25%

Edging -25%

INSTRUCTOR RATING SCALE

1. Tool Selection _ _ _ _ _ _ _ _ _ _ _ 15
2. Knowledge of job _ _ _ _ _ _ _ _ _ _ 10
3. Speed _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ 10
4. Attitude _ _ _ _ _ _ _ _ _ _ _ _ _ _ 15
5. Tool Care _ _ _ _ _ _ _ _ _ _ _ _ _ _ 10
6. Safety _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ 15
7. Accuracy _ _ _ _ _ _ _ _ _ _ _ _ _ _ 15
8. Cleanliness _ _ _ _ _ _ _ _ _ _ _ _ 10

COURSE BUILDING MAINTENANCE

TERMINAL PERFORMANCE OBJECTIVE NO. 11.0 — Glazing and Caulking

Given a window frame needing glazing, the learner will correctly prepare the frame, bed the frame with glazing compound, measure, cut, install and glaze the glass to a tolerance of 1/16".

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		11.0	Prepare the window frame given you for glazing. Then cut single-strength glass to the correct size, bed it and glaze it in the window frame.
11.1	The learner will with 80% accuracy identify 5 given common glazing hand tools: a. glass cutter b. putty knife c. framing square d. combination square e. T-Bevel	11.1	Placed on the workbench are 5 common glaziers hand tools with an identifying letter. Name each in writing. _____ _____ _____ _____ _____
11.2	Given a sample of the 4 types of glass named below, the learner will correctly identify them to an accuracy of 80%: a. single-strength glass b. double-strength glass c. plate glass d. obscure glass	11.2	Examine each of the 4 glass samples given you and identify them according to the letter placed on them: _____ single-strength glass _____ double-strength glass _____ plate glass _____ obscure glass

COURSE BUILDING MAINTENANCE - BASIC

TERMINAL PERFORMANCE OBJECTIVE NO. 11.0 (cont'd) Glazing and Caulking

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
11.3	The learner will state orally or in writing 3 places where caulking is necessary in the construction or maintenance of a building: a. window frames b. door frames c. between siding and foundation	11.3	List 3 places where it is necessary to utilize caulking in the construction of a building.

COURSE BUILDING MAINTENANCE

TERMINAL PERFORMANCE OBJECTIVE NO. 12.0

Custodial Practices

The learner will demonstrate his knowledge of Custodial Practices by completing the attached work/frequency sheet with an accuracy of 70% or better and property operating five (5) given power tools commonly used by custodians.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		12.0	See attached tests a. written test b. performance test
12.1	Given 5 types of floors the learner will choose the correct equipment and demonstrate his ability to dust mop the floors with 80% proficiency as determined by a teacher made rating scale.	12.1	Choose the correct equipment and supplies and demonstrate dust mopping on each of the following type floors; a. sealed wood b. vinyl c. terrazzo d. treated concrete e. waxed wood
12.2	Given 5 types of floors to be wet mopped, the learner will correctly choose, set up, and use the equipment to wet mop these floors to 80% proficiency as measured by a teacher-made rating scale.	12.2	Choose, set up, and use the correct equipment and procedures to wet mop each of the following floors: a. asphalt b. vinyl c. terrazzo d. sealed wood e. sealed concrete
12.3	Given the necessary tools and materials and a dirty stairway, the student will dry clean the stairway utilizing the tools to given rules and observing given safety rules.	12.3	Dry clean and then wet mop the stairway assigned you. Follow all safety rules.

COURSE BUILDING MAINTENANCE

TERMINAL PERFORMANCE OBJECTIVE NO. 12.0 (cont'd) Custodial Practices

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
12.4	Given the assignment of shampooing carpet, the learner will choose the correct equipment and supplies and will shampoo the carpet to given specification.	12.4	Select the proper equipment and shampoo the carpet assigned you to the specifications given you by the instructor.
12.5	Given the assignment of cleaning a drinking fountain, the learner will choose the correct equipment and supplies and will clean the fountian to given specifications.	12.5	Clean the drinking fountain assigned you to specifications given by the instructor. Choose your own equipment and supplies.
12.6	The student will demonstrate proficiency in the use of the 20" electric floor machine to given specifications.	12.6	Clean the floor assigned you to the given specifications using the electric floor machine.

Criterion Measure - T.P.O. - #12.0

Demonstrate to your instructor the proper operation of the five power tools assigned, utilizing all safety precautions:

a. Carpet Shampooer

b. Heavy Duty Commercial Vacuum Cleaner

c. Buffing and Scrubbing Floor Machine

d. Wet-Dry Vacuum Pick-up Machine.

e. Automatic Scrubbing Machine.

Written Test T.P.O. #12

MISCELLANEOUS INTERIOR

DUTIES	FREQUENCY					
	Daily	Weekly	Monthly	Quarterly	Annually	As Required
Unlock & lock building						
Start heating plant						
Start fans, equipment						
Turn on lights as needed						
Check for burned out lights						
Check exits, entrances						
Check door closer adjustment						
Remove writing, marks, etc.						
Turn urinals on & off						
Clean service sinks						
Inspect for fire hazards						
Inspect motors, fans, etc.						
Inspect for leaks, etc.						
Clean door mats						
Check and spray for insects						
Check and adjust fountains						
Polish bright metal						
Burn trash						
Clean incinerator						
Clean convectors, heaters						
Clean air grilles						
Clean univent filters						

COURSE BUILDING MAINTENANCE

TERMINAL PERFORMANCE OBJECTIVE NO. 13.0 Landscaping

The learner will demonstrate his knowledge of landscaping, completing the I.P.O.'s as indicated and operating five (5) given power tools commonly used in landscaping.

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
		13.0	Demonstrate to your instructor the proper operation of the five power tools assigned, utilizing all safety precautions: a. Aerator b. Self propelled mower c. Lawn edger d. Lawn vacuum e. Weed eater
13.1	The learner will be able to select the proper method of weed control according to the type of weed present in a lawn.	13.1	From the following list of weeds, write a C for Chemical control or an M for Mechanical control, after the type weed. a. Plantain _____ b. Dollar Weed _____ c. Crab Grass _____
13.2	Given a patch of lawn needing weed control, the learner will select the proper method and will correctly apply it to the lawn.	13.2	Select the proper method of weed control for the patch of lawn assigned you and apply the control properly.
13.3	The learner will properly identify the correct time of year to apply fertilizer to 4 given types of lawns.	13.3	Match the two columns: Type of Grass _____ Centipede _____ Bahia _____ St. Augustine _____ Zoysia Fertilizing Schedule a. March and September b. Spring c. Every two months d. March, May and September

COURSE BUILDING MAINTENANCE

TERMINAL PERFORMANCE OBJECTIVE NO. 13.0 (cont'd) Landscaping

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
13.4	Given samples of the 4 common lawns, the learner will identify each: a. Centipede b. Bahia c. St. Augustine d. Zoysia	13.4	Identify the 4 pieces of sod given you by writing their identifying letter in the correct blank below: _____Centipede _____Bahia _____St. Augustine _____Zoysia
13.5	Given a patch of lawn fertilizing the learner will choose and apply the correct fertilizer in the correct propor proportion.	13.5	Select the proper fertilizer for the patch of lawn assigned you and properly apply it in the correct proportion.
13.6	The learner will, at 80% proficiency list the steps for spot treating a lawn in their proper order.	13.6	Listed below are the steps necessary for spot treating a lawn. Arrange them in their proper order by putting a number in the blank preceeding each step: _____sprig or seed _____add organic matter and work into soil _____Remove old grass _____Keep moist until completely established.
13.7	The learner will identify by description the most common lawn pests including chinch, bug, ground pearl, cricket mole and armyworm.	13.7	From the following descriptions, match the letters to the blanks to the type of pest. (a) 1 1/2" long, et. brown in color (b) 1/5" long, black, white wings (c) 1 1/2" long, inverted "T" on head (d) 1/16" diameter ( ) ground pearl ( ) chinch bug ( ) cricket mole ( ) armyworm

COURSE BUILDING MAINTENANCE

TERMINAL PERFORMANCE OBJECTIVE NO. 13.0 (cont'd) Landscaping

NO.	INTERMEDIATE PERFORMANCE OBJECTIVES	NO.	CRITERION MEASURES
13.8	The learner will identify the correct time to prune such plants as spring blooming, evergreens, broad leaned species, and hedges.	13.8	Identify the correct pruning times in the statements below by inserting a T for True statements and an F for False statements. _____ Spring blooming species should be pruned immediately after flowering. _____ Evergreens should be pruned only in the winter. _____ Broadleaved species should never be pruned. _____ Hedges need frequent shearing from spring until autumn.
13.9	Given the necessary materials, the learner will demonstrate the correct method of mulching a camelia plant.	13.9	Mulch the camelia plant given you.
13.10	Given two lists, one of fertilizers and one of plants, the learner will correctly match the two lists with 80% accuracy.	13.10	Match the two lists below: _____ Azalea _____ Poinsettia _____ Ligustrum a. 8-8-8 b. 4-6-6 c. 6-6-6
13.11	Given the necessary materials, the learner will demonstrate the correct method of trimming a ball shaped and a box shaped ligustrum plant.	13.11	Trim the plants assigned to you, one in a ball shape and one in a box shape.